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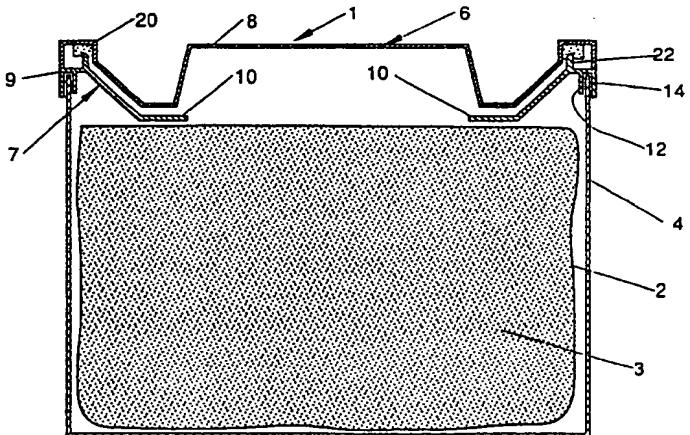
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(54) Title: PACKAGING SYSTEM INCLUDING SMALL FRAME WITH INTEGRAL LID, BAG AND EXTERNAL CONTAINER



(57) Abstract

For a packaging (1), consisting of an internal bag (2) containing for example a product preserved under vacuum, of an external container and of a small frame with integral lid (6) made of plastic material, an improved sticking system is described, which renders both said bag and the external container integral with the small frame itself. The adoption is envisaged of reliefs on the lower wall of the flange (10) of the small frame, and of branched fins (30) arranged in the peripheral groove (12) of said small frame, into which the edge of the external container is inserted, in order to increase the surface area for adhesion, promote the distribution of the glue and to create barriers to the passage of air for the purpose of improving the hermetic sealing of the lid during the use of the packaging. The upper edge of the external container can also have a differently shaped configuration in order to improve adhesion.

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**Packaging System Including Small Frame With Integral  
Lid, Bag And External Container**

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**DESCRIPTION**

15        The present invention relates to a system for sticking a small frame with integral lid made of plastic material to a bag and to an external container, into which the bag itself is inserted so as to form as a whole a boxed packaging which is hermetically sealed during the  
20        use of the packaging.

25        Packagings of this type are already known, which are formed by an internal bag of square shape containing for example, roast and ground coffee packed under vacuum, by an external container, usually a box made of card, and by a small frame with integral lid made of plastic material which is joined both to the internal bag and to the external container.

30        Such packagings generally have an unsatisfactory join both between the lower surface of the flange of the small frame and the internal bag, and between the upper edge of the external container and the small frame itself. This leads to imperfect airtightness which compromises the preservation of the aroma of the product, in particular in the case of coffee, once the user has opened the wall of the bag appearing in the opening  
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delimited by the flange, notwithstanding the good hermetic sealing existing between the lid and the upper rim of the small frame, which is ensured by a gasket.

5 The aim of the present invention is to equip the small frame with integral lid made of plastic material with a sticking system which has the following advantages in relation to the other versions already on the market:

10 a) better adhesion of the flange of the small frame with integral lid to the surface of the internal envelope, represented in this case by a bag under vacuum;

b) better airtightness of the sticking zone between the flange and the bag, and

15 c) greater adhesion of the small frame to the external container, represented for example by a cardboard envelope.

20 The excellent adhesion characteristics obtained using the sticking system according to the invention render the packaging more hermetic and more resistant to the conditions of stress which are often brought about during transport and use in the domestic environment.

25 The sticking system has been developed, in a specific manner, for a packaging for roast and ground coffee, packaged under vacuum, although the same is also applicable to different categories of product such as, for example, peanuts, biscuits, cocoa or the like or detergents packaged in types of packaging having a boxed envelope.

30 In general, the invention guarantees a better method of sticking an element made of plastic material, represented for example by a dispensing member, to a container.

35 According to the invention, the sticking system is based on the combination of one or more of the following characteristics:

a) part of the groove for sticking the flange of the small frame made of plastic material, in which the edges of the external container are inserted, has branched sticking fins. These branched fins guarantee a more extensive three-dimensional and multidirectional

5 contact with the glue, through the sticking planes, by means of multiple orientation in space. As a result of the greater surface area of the specific zones of the small frame which are exposed to the glue and of the appropriate orientation of the sticking fins, the adhesion force, when the external container is stuck to the small frame, is greater.

10 b) The lower surface of the flange of the small frame made of plastic material is corrugated instead of smooth. This shaped finish of the sticking flange renders its surface non-uniform and therefore the layer of glue which connects the small frame to the bag is distributed three-dimensionally. This increases the surface area of the small frame available for adhesion, divides the stress of detachment into components of elongation and shear and thus improves the adhesion between the small frame and the sticking means. Moreover, the incorporation of lines of continuity along the entire periphery of the shaped part renders the sticking more airtight by means of the barriers presented to the exchange of gases from one side to the opposite side of the layer of glue.

15 c) It is moreover envisaged that the upper edge of the external container to be connected to the flange has a non-uniform finish of the surface instead of a flat smooth finish. This non-uniform finish of the upper edge of the container also permits the making of three-dimensional and multidirectional contact with the areas of glue, increasing in this manner the surface area of the container available for adhesion, and distributing the stress into components of elongation and shear.

20 25 30 35 Packagings with a boxed envelope are already known, such packagings involving the use of a lid made of plastic material stuck both to the internal bag and to the external container. However, the adhesion properties and the strength of the packaging are in general limited as a result of the smooth and uniform surface available for adhesion between the parts.

Moreover, the sticking ribs used in packagings of the prior art to fix the small frame with integral lid to

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the external container provide a limited surface area for adhesion, while the branched structure of the fins, according to the invention, guarantees a multiaxial orientation of the sticking surfaces capable of 5 increasing the adhesion in all necessary directions.

Also known is a uniform and smooth sticking flange of the small frame, which is used to connect a small frame with integral lid made of plastic material to a support surface. The shaped, non-uniform design of the 10 sticking flange, according to the present invention, provides a three-dimensional and multidirectional orientation of the sticking surface, with a consequent increase in the adhesion force in all directions. The lines of continuity in the sticking arrangement guarantee 15 better airtightness when barrier properties are required of the glue zones. Moreover, the surface finish of the sticking flange limits the discharge of the glue when the two elements are connected and the surface finish itself also permits a suitable distribution of the excess glue 20 according to a preferred direction, increasing in this manner the adhesion in other parts of the surface.

The non-uniform finish of the upper sticking edges of the external container, likewise envisaged by the present invention, guarantees lastly a much better 25 adhesion in relation to the flat and uniform finish of the sticking surface in all the packagings with boxed envelope known today.

Further details may be drawn from the following description of a preferred, but not exclusive, exemplary 30 embodiment of the present invention and of a number of alternatives, with reference to the attached drawings, in which similar reference numbers refer to corresponding elements in the figures of said drawings, and in which:

Figure 1 represents diagrammatically in vertical 35 transverse cross-section a packaging of the type considered in the present invention;

Figure 2 represents the view from the bottom towards the top of the small frame with integral lid for closure of the packaging;

Figure 3 represents on enlarged scale the detail of a section of the branched fins provided, by way of example, on the shorter sides of the small frame seen in the direction III-III in Figure 2;

5 Figure 4 represents the cross-section according to the line IV-IV of one of the fins in Figure 3;

Figure 5 represents the cross-section according to the line V-V in Figure 2 of the branched fin arranged in the front part of the flange of the small frame;

10 Figure 6 represents the cross-section according to the line VI-VI of the fin in Figure 5;

Figure 7 represents a preferred type of surface finish, according to the invention, of the lower peripheral surface of the flange of the small frame;

15 Figure 8 represents on enlarged scale the detail of a section of the surface finish of the flange illustrated in Figure 7;

20 Figure 9 represents the cross-section according to the line IX-IX in Figure 8, of a section of a row of surface finish elements of the flange;

25 Figure 10 represents diagrammatically on reduced scale in relation to Figure 7 one of the possible alternatives, within the scope of the inventive idea, of the surface finish design of the lower surface of the flange of the small frame;

30 Figure 11 represents diagrammatically in perspective the surface finish of the upper rim of the external container, by way of example, of at least one of its sides, to improve adhesion of the wall of the external container to the small frame, and

Figure 12 represents one of the possible surface finish alternatives of said rim, as an alternative to that illustrated in Figure 11.

35 In Figure 1, the boxed packaging for a granular product, of the type considered in the present invention, is represented diagrammatically in longitudinal cross-section. This packaging, indicated as a whole by 1, comprises an internal bag 2 of essentially parallelepipedal shape, which contains any product 3, for example

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roast and ground coffee packed under vacuum, an external container 4, constituted for example by a box made of card, and a lid indicated as a whole by 6, which is formed by a small frame 7 which is integral with a 5 closure lid 8 which pivots about a hinge 9 of the same material as the small frame itself.

The small frame 7 takes the form (see also Figure 2) of a shaped frame provided with a flange 10, the lower surface of which has to be fixed impermeably, by means of 10 sticking, to the upper wall of the bag 2, said small frame also being equipped with a peripheral connecting groove 12 capable of retaining, also by sticking, the edge 14 of the external container 4.

Of said elements 10 and 12, subject of the 15 improvements of the present invention, the first is particularly critical and important, as it has to constitute optimum airtightness in order to prevent the decline of the organoleptic properties of the product contained in the internal bag once it has been opened as, 20 during use, reliance is placed upon good tightness of the closure lid 8 which is equipped with a gasket 20 which bears against the rim 22 of the small frame 7. The groove 12 intended to retain by sticking the edge of the external container 4 is critical on the other hand in order to 25 obtain on the whole a solid packaging which is reliable against the mechanical stresses of transport and of use.

According to the invention, in order to improve the join of the edge 14 of the container 4 introduced 30 into the groove 12, there is provided, by way of example on two opposite sides of the small frame, a plurality of branched fins 30 (see also Figures 3 and 4), each of which consists of a plate 32 connected to a rib 34 which is integral with the wall of said small frame.

The rib 34 appears for a limited projection S on 35 the plane of the plate 32, creating a non-uniformity which contributes to better adhesion of the edge 14 of the wall of the external container 4 introduced into the groove 12.

The back 35 of the ribs 34 is inclined in

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relation to the plane of the flange 10 in order to constitute an invitation and a guide for the edge 14 of the wall of the external container 4 during the preparation of the packaging, which is usually automated.

5 The plates 32 of the branched fins 30 can assume any other shape and size than that illustrated in Figure 3.

10 It is envisaged that at least one branched fin 30a of the type previously described is also applied in the front central zone of the small frame (see Figures 2, 5 and 6) for the same purposes.

15 A further provision of the present invention aimed at better sticking of the upper wall of the internal bag 2 to the lower surface of the flange 10 is to give said zone a corrugated surface finish, as indicated by way of illustration in a preferred exemplary embodiment in Figure 7.

20 To this end, the surface of the flange 10 is for example equipped, during surface finishing, with a plurality of elements 40 in slight relief, interconnected by a joining section 42 so as to form a number of barrier lines interposed between small channels 44.

25 An enlarged detail of this preferred solution is illustrated in Figures 8 and 9, in plan view and cross-section respectively. This surface finish, the elements 40 of which can assume the most varied geometrical shapes, gives rise to a multiplicity of corners and recesses which multiply the possibility of joining of the respective contact surfaces of the flange and of the bag, while at the time of the sticking operation the glue can if necessary be distributed more uniformly by running along the small channels 44. At the same time, the multiple barrier constituted by a number of rows of elements 40 prevents, when sticking has taken place, the 30 passage of external air, guaranteeing hermetic sealing of the packaging during use.

35 The shaping of the surface finish reliefs of the surface of the flange 10 and the incorporation of barrier lines to prevent the passage of air can clearly be

effected in different ways. Remaining within the scope of the inventive idea, a possible alternative to the solution illustrated in Figure 7 can be that shown diagrammatically in Figure 10 for example.

5 According to the invention, it is envisaged that the edge 14 also of the external container 4 has a non-uniform finish over some or all of the surface as indicated for example in Figures 11 and 12. This type of finish, which is made using undulations or grooves in the thickness of the card or using rows of hollows or of reliefs or in any other manner known to experts in the field, increases the surface area of the edge 14 of the container available for adhesion.

10 15 20 25 The branched fins, which are integral with the flange of the lid and arranged within the lower peripheral groove of the small frame, can have any shape and size, provided that they make it possible to establish three-dimensional and multidirectional contact between the layer of glue and the sticking elements. The sticking surfaces of the branched fins can be arranged in any position and have any spatial orientation in relation to the surface of the other element, with which the connection has to be established. The other element which has to be connected can have any shape and any size. The branched fins can constitute part of an article made using any material.

30 35 The surface finish of the sticking flange of the small frame can have any configuration and any dimensional relationship between the projecting parts and the hollowed parts. This surface can include any number of scoring lines and channels of any size, oriented in any direction. It can include any number of continuity projections so as to increase the airtightness and can belong to an article made using any material.

35 The shaped surface of the edge of the other element which is to be connected to the small frame, represented in the specific case by the wall of the external container, can have any configuration and any dimensional relationship between the projecting and

5       hollowed parts. It can include any number of projections or grooves oriented in any direction. When the shaped surface is obtained by means of embossing geometrical figures on the edges, the geometrical figures can have any configuration and size. The other element which is to be connected, that is to say the external container, can have any configuration and size and can be made using any material.

10      It is also understood that the glue used to connect the two parts can be of any type.

15      The sticking system according to the invention leads to greater adhesion between the parts of the packaging, an increase in the airtightness of the sticking zone between lid and bag and greater resistance to the mechanical stresses due to transport, to handling and to use of the packaging.

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CLAIMS

1. System for sticking a small frame with integral lid (6) to a bag (2) made of flexible material for packaging products and to an essentially rigid external container (4), into which said bag is inserted, the small frame (7) comprising a flange (10), the lower surface of which is intended to be fixed by means of adhesive to the flat upper surface of the bag (2), and which is equipped at the bottom with a lower peripheral groove (12), into which is inserted the upper edge (14) of said external container to be fixed, also by means of adhesive, to the small frame (7), characterised in that the sticking surface of the flange (10) is surface-finished so as to have a plurality of zones in relief (40) for the purpose of directing and distributing the sticking material.
2. Sticking system according to Claim 1, characterised in that the zones (40) in relief on the lower surface of the flange (10) of the small frame (7) are interconnected by a section of wall (42) of essentially the same height as said zones in relief, so as to form continuous barrier lines which define between them small channels (44) which are capable of promoting the distribution of the glue.
3. Sticking system according to Claims 1 and 2, characterised in that the configuration of said zones in relief (40) can assume any shape such as for example quadrangular, circular, star-shaped or similar.
4. Sticking system according to Claims 1 and 2, characterised in that the joining sections (42), which interconnect said zones in relief (40), preferably have a transverse dimension or width which is smaller in relation to the width of said zones in relief.
5. Sticking system according to Claims 1 to 4, characterised in that the rows of said zones in relief (40), which are interconnected by joining sections in relief (42), form barrier lines which are parallel to one another and to the sides of the small frame.
6. Sticking system according to Claims 1 to 4, characterised in that the zones in relief (40a) form rows

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which are parallel to one another but inclined in relation to the sides of the small frame.

5        7.        Sticking system according to Claims 1 to 6, characterised in that there are provided in the peripheral groove (12), in one or more positions, one or more essentially vertical plates (32) which are capable of increasing the sticking surface area which the small frame displays in relation to the corresponding facing zones of the upper edge (14) of the container (4) inserted in the groove, at least one plate (32a) being provided in the region of the point where the force of opening the lid of the small frame is exerted, one or more upper edges (14) of the external container (4) being equipped with a finish of reliefs and hollows in order to render this portion of surface corrugated for the purposes of improving the sticking action of the adhesive used.

10        8.        Sticking system according to Claim 7, characterised in that each of the plates (32) is integrally connected, preferably in its central position, to a support rib (34) which in turn is integral with the internal wall of said peripheral groove of the small frame (7).

15        9.        Sticking system according to Claims 7 and 8, characterised in that the rib (34) placed in support of each plate (32) of the three-dimensional fins (30) has a limited projection (S) on the surface of the plate (32) turned towards the external wall (71) of the small frame (7).

20        10.        Sticking system according to one or more of Claims 7 to 9, characterised in that the plates (32) of the three-dimensional fins (30) can have any shape, cross-section and size and can be variously branched.

25        11.        Sticking system according to one or more of Claims 7 to 10, characterised in that at least one three-dimensional plate (32a) is provided in the region of the point where the force of opening the lid of the small frame is exerted.

30        12.        Sticking system according to Claim 7,

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characterised in that one or more upper edges (14) of the external container (4), which are inserted into the peripheral groove (12) of the small frame (7) so as to be fixed by sticking to the small frame itself, have a  
5 finish which is not flat, obtained by means of the formation of projections, hollows, grooves or scores of any shape and size, oriented or distributed in any direction on said edges (14).

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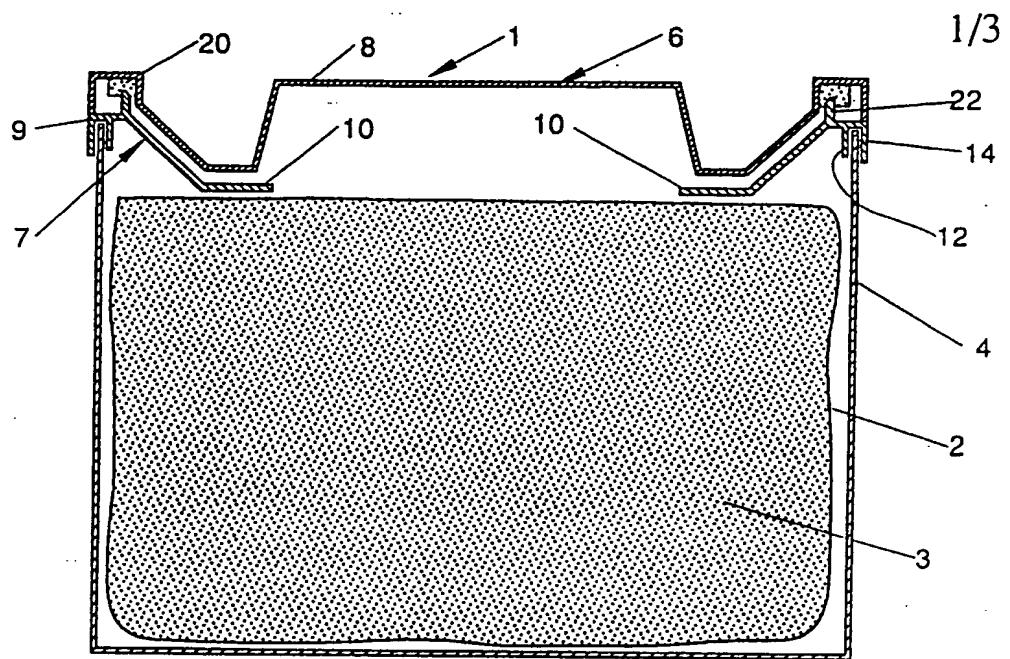
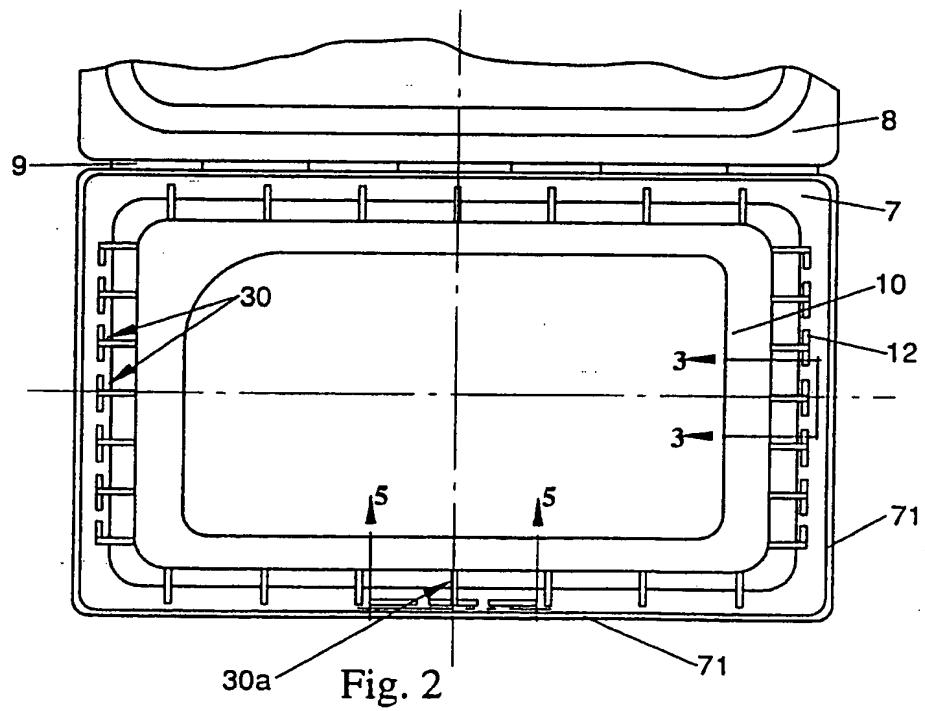


Fig. 1



## **SUBSTITUTE SHEET**

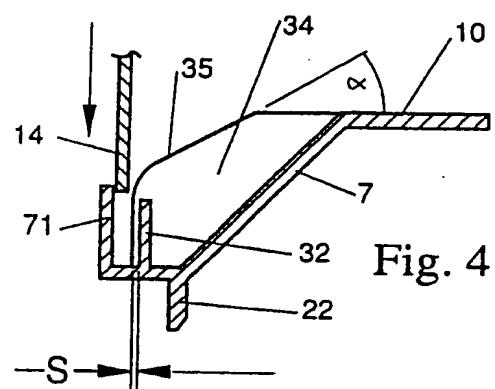


Fig. 4

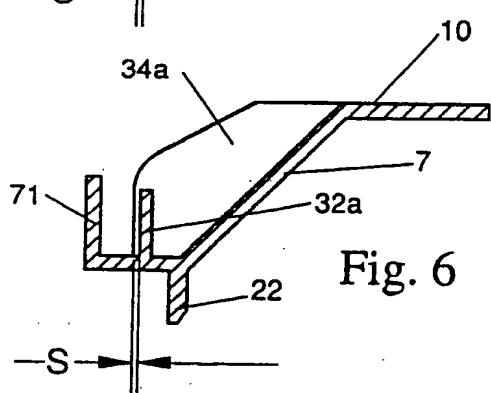


Fig. 6

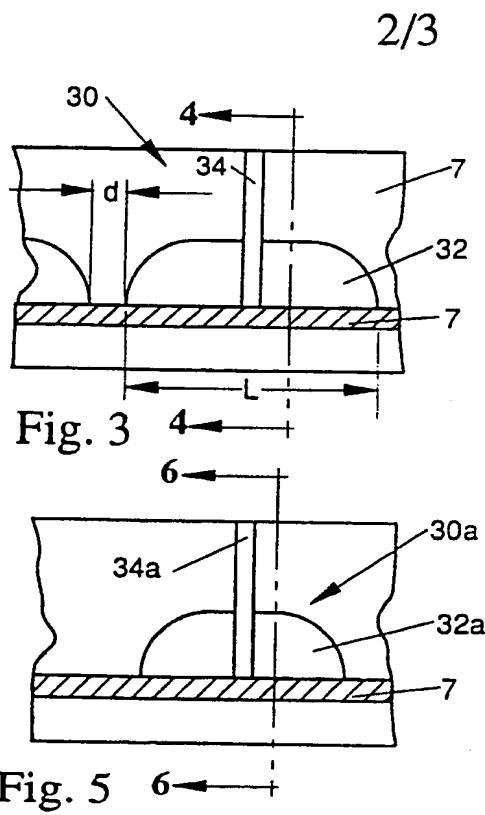


Fig. 3

Fig. 5

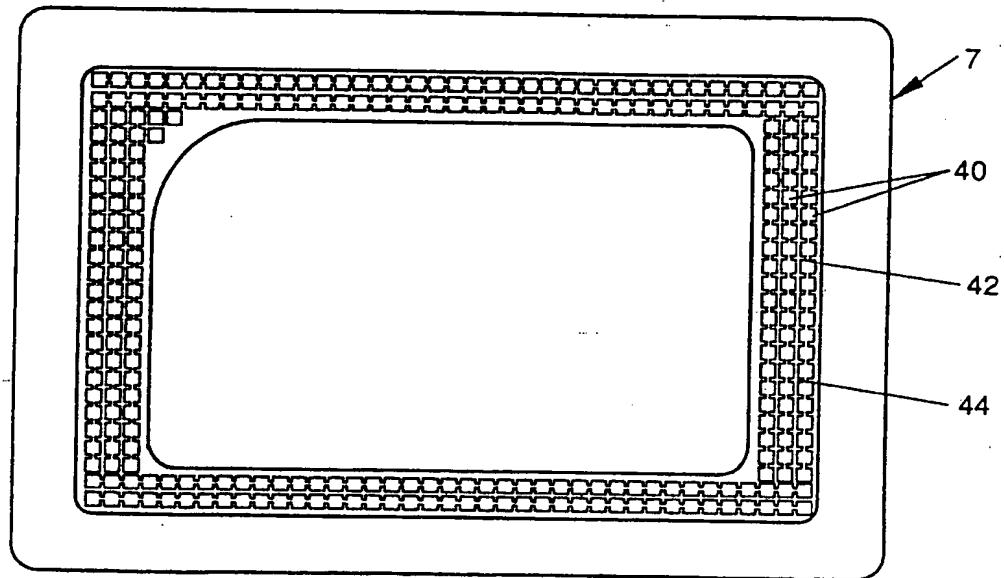


Fig. 7

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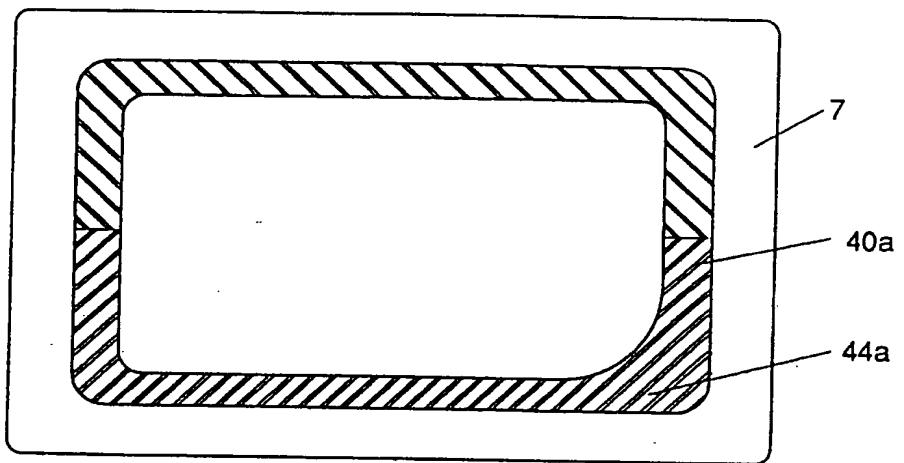
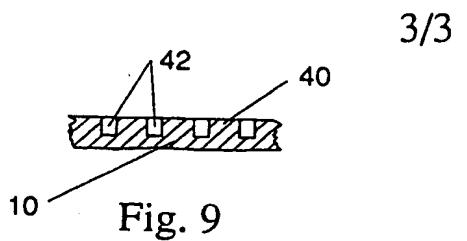
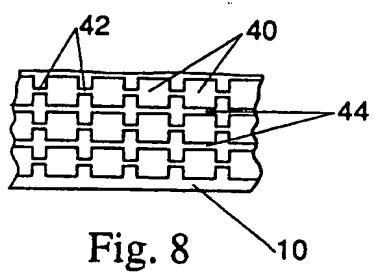


Fig. 10

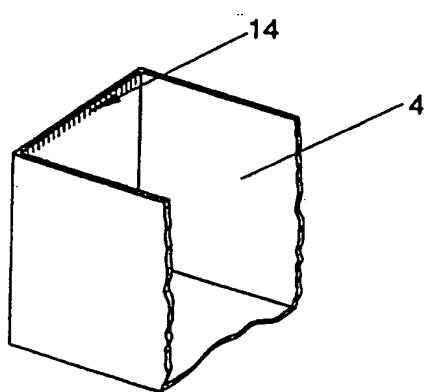


Fig. 11

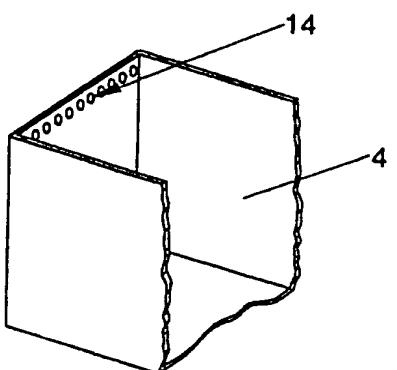


Fig. 12

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# INTERNATIONAL SEARCH REPORT

International Application No. PCT/US92/00814

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC(5): B65D 90/04 U.S. 220/403,404,459		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
U.S.	220/403,404,405,410 459	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT</b> <sup>9</sup>		
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
A	US,A, 3,785,544 (SMITH) 15 JANUARY 1974	
A	US,A, 3,944,127 (BRUKE ET AL) 16 MARCH 1976	
A	US,A, 4,765,579 (ROBBINSIII ET AL) 23 AUGUST 1988	
A	US,A, 4,892,224 (GRAHAM) 09 JANUARY 1990	
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A	US,A, 4,953,740 (KODA) 04 SEPTEMBER 1990	
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